

What is claimed is:

1. A liquid hypergolic propellant is provided comprising:

(a) reactive metals and/or reactive metal salts; and

(b) one or more liquid fuels,

wherein the propellant comprising (a) and (b) is hypergolic when combined with an oxidizer.

2. The liquid hypergolic propellant according to claim 1, further comprising (c) a sensitizer.

3. The liquid hypergolic propellant according to claim 1, further comprising (d) a gelling agent.

4. The liquid hypergolic propellant according to claim 1, wherein the reactive metals and/or reactive metal salts are defined by Formula I as follows:



wherein A is one or more of any of Li, Na, and K; M is one or more of any of B, C, and Al; H is H; x is 0-3, y is 0 or greater, and z is 0 or greater, and wherein when x is 0, y is 1, and when y is 0, x is 1.

5. The liquid hypergolic propellant according to claim 4, wherein the reactive metals and/or the reactive metals salts are selected from the group consisting of simple hydrides, complex hydrides or organolithium compounds.

6. The liquid hypergolic propellant according to claim 1, wherein the fuels comprise one or more of hydrocarbons, alcohols, ketones, ethers, and/or aldehydes.

7. The liquid hypergolic propellant according claim 1, wherein the fuels are defined by the following Formula II as follows:



wherein x is 0-8, y is 1-18, z is 0-4, and v is 0-5, and wherein when x is 0, v is 1 or greater.

8. The liquid hypergolic propellant according to claim 1, wherein the sensitizer comprises one or more of amines, azides, and/or amides.

9. The liquid hypergolic propellant according to claim 1, wherein the sensitizer is defined by Formula III as follows:



wherein x is 1-8, y is 1-18, and z is 0-4.

10. The liquid hypergolic propellant according to claim 1, wherein the gelling agent comprises silica gel, guar, agar or starch.

11. The liquid hypergolic propellant according to the claim 1, wherein the reactive metals and reactive metal salts together comprise from 0.1-50.0 weight percent of the propellant.

12. The liquid hypergolic propellant according to claim 1, wherein the fuel comprises 50.0-99.9 weight percent of the propellant.

13. The liquid hypergolic propellant according to claim 2, wherein the sensitizer comprises 0.1-40.0 weight percent of the propellant.

14. The liquid hypergolic propellant according to claim 3, wherein the gelling agent comprises 0.1 – 20.0 weight percent of the propellant.